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CONTRACTING ORGANIZATION: The University of Pittsburgh
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Dr. Alan Wells

E-Mail: wellsa@upmc.edu

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14. ABSTRACT

Prostate cancer disproportionately afflicts African-American men. As such, we feel that it is critically important to recruit researchers from this population if we are to conquer this disease. Numerous programs have attempted to recruit minorities to biomedical research and prostate cancer in particular. Often this involves a short period of research immersion during a summer semester. However, it has been shown that many of these trainees do not persevere in the selected area due to the singular nature of the experience. Our goal is to formalize a program to broaden the scope of and enlarge Tuskegee University's prostate cancer research , which will be accomplished through targetinginterested undergraduate students early during their science studies at Tuskegee University and enabling them to participate in summer research and education training periods at the University of Pittsburgh and the University of Pittsburgh Cancer Institute as part of their overall prostate cancer education.

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Pittsburgh-Tuskegee Prostate Training Program

Alan Wells (Univ Pittsburgh)
Timothy Turner (Tuskegee Univ)

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PITTSBURGH TUSKEGEE PROSTATE TRAINING PROGRAM

Alan Wells (Pittsburgh), Timothy Turner (Tuskegee)

INTRODUCTION

We proposed an extended training program for college undergraduates that aims to build a cadre of young investigators of color in prostate cancer. Prostate cancer disproportionately afflicts African-American men; this increased incidence is compounded by issues of access to and utilization of healthcare resources. As such, we feel that it is critically important to recruit researchers from this population if we are to conquer this disease. Numerous programs have attempted to recruit minorities to biomedical research and prostate cancer in particular. Often this involves a short period of research immersion during a summer semester. However, it has been shown that many of these trainees do not persevere in the selected area due to the singular nature of the experience. *We hypothesize that an immersive summer training program works best within a larger college-oriented experience*.

We proposed to test this hypothesis by designing an undergraduate research training program in prostate cancer that starts in the home college at Tuskegee University, immerses the students for 10 weeks in a specific research project with mentors at the University of Pittsburgh, and then continues the research after returning to Tuskegee under the aegis of a collaborating mentor. Thus, the student is to undertake the research over a one- to two-year period allowing the student to partake meaningfully in the full cycle of research – thesis generation, experimental planning, experimentation, presentation, and writing and publication. Thus, students will be recruited and selected at the beginning of the year, develop a project that involves collaboration between mentors at Pittsburgh and Tuskegee, take course that contribute to the project prior to the summer, initiate that project in depth at Pittsburgh, and then return to Tuskegee to continue the work as independent study, and communicate the findings at national meetings and in the literature. This extended involvement not only benefits the trainee but also forges collaborations between individual faculty members at the two different institutions. This should provide for further avenues that facilitate mainstreaming and integration of training and research for other undergraduate, graduate and post-doctoral trainees.

BODY

The accepted Statement of Work (Table 1) described a series of tasks to accomplish the Goals of this training program. We will state the SOW Task and then comment on the work accomplished. In sum, all Tasks were accomplished successfully.

Year 3 (2011)

December 2010 – January 2011, Tuskegee University sophomore trainees will be selected as "Prostate Cancer Scholars" for summer internship at the University of Pittsburgh. For the second year, this involved two distinct pathways. The new trainees in the class of 2011 were recruited as per earlier by posters, emails and announcements at Tuskegee along with targeted students being approached by Tuskegee mentors. Three students were selected and all accepted (one did not attend due to a last minute family crisis that required him to remain with the nuclear family that summer). The criteria were grades, research interests, faculty recommendations, and student essays. The class of 2010 and their Tuskegee mentors were contacted by the PTPTP and their Pittsburgh mentors to ascertain the trainees' ability to return. Two returned for the second year of the program, and one returned for a third year from the class of 2009. Thus, we had 5 trainees actively in the program.

February – April 2011, Trainees will be selectively paired with University of Pittsburgh Faculty mentors according to their research interests. All three new student trainees were successfully

placed in laboratories for the summer term at University of Pittsburgh (Table 1). The two, second year returning trainees continued in the same projects and the third year student attempted a new project (Table 2).

Table 1. Class of 2011 student trainees and mentors.

Student	Project Title	Pitt Mentor	Tuskegee Mentor
Gibson, Sabria	The Effects of the Drug Dasatanib on the Treatment of Prostate Cancer	Zhou Wang	Cynthia Jackson
Baldwin, Samantha	Prostate Cancer Cells Invasion through Fibrin	Jan Pilch	Cynthia Jackson

Table 2. Class of returning student trainees and mentors.

Student	Project Title	Pitt Mentor	Tuskegee Mentor
Burke, Ryan	SNP Analysis of Folate Modulators in Prostate Cancer Patients	Dean Bacich	Clayton Yates
Johnson, Marcus	Phenethyl Isothiocyanate Effect on Tumor Growth and Survival	Shivendra Singh	Temesgen Samuel
Morgan, Darian	Androgen Protein Localization and Degradation Androgen Protein Localization and Degradation	Zhou Wang	Kamel Khazai

Table 3. List of student abstracts presented at meetings during the third year of the program.

Student	Abstract	Meeting
Jenkins, Jamilah (2009)	"The Role of Phosphoinositide-3 Kinase (PI-3K) for Prostate Tumor Cell Proliferation" (**Jamila Jenkins was selected for an oral presentation in the Cell Biological Sciences Session**)	Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC
Small, Santanna (2009)	"Regulatory Influence of Dietary Folate on Prostate Cancer Gene Expression"	Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC
Phillips, Zachery (2009)	"Determining The Regulatory Function of Kaiso on CXCR3 and EGFR Induced Cell Migration in Prostate Cancer"	Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC
Johnson, Marcus (2010)	"Phenethyl Isothiocyanate Inhibits Growth of a Mouse Mammary Tumor Cell Line (BRI-JM04) by Causing Apoptosis"	Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC
Morgan, Darian (2010)	NES^{AR} Plays a Major Role in Regulating AR Protein Subcellular Localization, Ubiqitination and Proteasome-Dependent Degradation	Annual Biomedical Research Conference for Minority Students (ABRCMS), November 11-13, 2010, Charlotte, NC

May 2011 – August 2011, Trainees will travel to the University of Pittsburgh to begin their 10-week prostate cancer research experience. All five students undertook a summer of research under the aegis of the Summer Undergraduate Research Program of the Cellular and Molecular Pathology Graduate Program, as described in the proposal. This provided didactic sessions and workshops in grant and paper writing and admission planning for graduate and medical schools. Both new students were successful in their work and will be invited by their mentors to return for a second summer. The three returning students continued their work and were successful as judged by their mentors and the end of the summer program Trainee Symposium presentations.

August 2011 - March 2012 Trainees will return from University of Pittsburgh, and continue their research training for the upcoming academic year under guidance of Tuskegee University Faculty Mentors. The two trainees of the Class of 2011 established research projects at Tuskegee University that dovetailed with and continued upon the work done at Pittsburgh (Table 1). The returning trainees continued their research at Tuskegee. This has led to the students presenting abstracts at national and regional research meetings (Table 3). These data demonstrate a long-term commitment by the returning students.

KEY ACCOMPLISHMENTS

- Five student trainees participated in the summer program
- All completed the summer training successfully
- The new trainees established/continued ongoing research activities at Tuskegee
- Five of seven trainees presented posters or talks at a national meeting

REPORTABLE OUTCOMES

Abstracts:

2011

Samantha Baldwin, Charlotte Engel, Lynn M. Knowles, Jan Pilch. Prostate Cancer Cell Invasion through Fibrin. Summer Undergraduate Research Program, University of Pittsburgh Cell Biology, Molecular Physiology, and Cellular and Molecular Pathology, July 29, 2011, Pittsburgh, PA. Oral Presentation

Ryan K. Burke, Dean Bacich, Jennifer Gregg. SNP Analysis of Folate Modulators in Prostate Cancer Patients. Annual Biomedical Research Conference for Minority Students, November 9-11, 2011, St. Louis, MO. Oral Presentation

Marcus E. Johnson, Eun-Ryeong Hahm , Shivendra V. Singh. Investigation on the Autophagic Effects of Withaferin A In Breast Cancer Cells. Annual Biomedical Research Conference for Minority Students, November 9-12, 2011, St. Louis, MO. Poster Presentation.

2010

Zachery Phillips, Qian Wu, Alan Wells, Clayton Yates. Determining the Regulatory Function of Kaiso on Cell Migration as an Indicator of Metastasis in Prostate Cancer. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Poster Presentation.

Jamilah Jenkins, Jianjun Zhou, Clayton Yates. (2010) The Effects of Epithelial to Mesenchymal Transition (EMT) on RC77 Prostate Tumor Cells. The First Joint Annual Research Symposium (11th Annual HBCU-UP Symposium & 37th Annual Sigma Xi Research Symposium), March 12-13, 2010 Tuskegee, AL Tuskegee, AL. Poster Presentation.

Jamilah Jenkins. Role of Phosphoinositide 3-kinase (PI-3K) for Prostate Tumor Cell Proliferation. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Oral Presentation (Biological Sciences Session 12).

Marcus E. Johnson, Eun-Ryeong Hahm, Shivendra V. Singh. (2010) Phenethyl Isothiocyanate Inhibits Growth of a Mouse Mammary Tumor cell line (BRI-JM04) By Causing Apoptosis. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Poster Presentation.

Darian Morgan and Zhou Wang. (2010) NES^{AR} Plays a Major Role in Regulating AR Protein Subcellular Localization, Ubiqitination and Proteasome-dependent Degradation. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Poster Presentation.

Santanna Small and Denise O'Keefe. (2010) Regulation of Prostate Cancer Gene Expression by Dietary Folate. Annual Biomedical Research Conference for Minority Students, November 10-13, 2010, Charlotte, NC. Poster Presentation.

Santanna Small and Denise O'Keefe. (2010) Regulation of Gene Expression by Dietary Folate. The First Joint Annual Research Symposium (11^{th} Annual HBCU-UP Symposium & 37^{th} Annual Sigma Xi Research Symposium), March 12-13, 2010 Tuskegee, AL Tuskegee, AL. Poster Presentation.

2009

Ryan K. Burke, Galina V. Shurin, Michael R. Shurin. (2009) Regulation of STAT3 Expression By Low Non Toxic Doses of Paclitaxel in Prostate Cancer. HBCU-UP National Research Conference, Washington, DC. Poster Presentation. ****2nd Place Prize Winner: Ryan Burke; Category: Poster Presentation; Subject Area: Biological Sciences.**

Jamilah Jenkins, Lynn Knowles, Jan Pilch. (2009) The Role of Phosphoinositide-3 Kinase (PI-3K) for Prostate Tumor Cell Proliferation. HBCU-UP National Research Conference, Washington, DC. Poster Presentation.

Santanna Small and Denise O'Keefe. (2009) Regulation of Gene Expression by Dietary Folate. HBCU-UP National Research Conference, Washington, DC. Poster Presentation.

Zachery Phillips, Qian Wu, Alan Wells, Clayton Yates. (2009) Determining the Regulatory Function of Kaiso on Cell Migration as an Indicator of Metastasis in Prostate Cancer. Annual Biomedical Research Conference for Minority Students (ABRCMS), Phoenix, AZ. Poster Presentation. –****$250 Award Winner: Zachery Phillips; Poster Presentation.**

CONCLUSIONS

This three-year training award has successfully reached and exceeded defined milestones. The systems are firmly in place to implement the following years' cadre of trainees.

Importance/Implications: The Key Accomplishments above firmly demonstrate the ability to establish a summer training program that has continuity with the home HBCU and the summer program itself. The outcomes over time will test whether this produces trainees more committed to research and/or prostate cancer than the usual one summer session disconnected from the home institution.

Recommended changes: The feedback from the trainees and mentors is that there is a learning curve during the first half of the summer program. Thus, the momentum gained during the last month of summer training needs to be seamlessly transferred to the home institution with a continuation project, that holds the promise not only of return the second summer, but of leading to a publication. We have decided to emphasize the continuity of the program to attain lasting outcomes.